

Supporting Information

Nanocatalysis MoS₂/rGO: An efficient electrocatalysts for the HER

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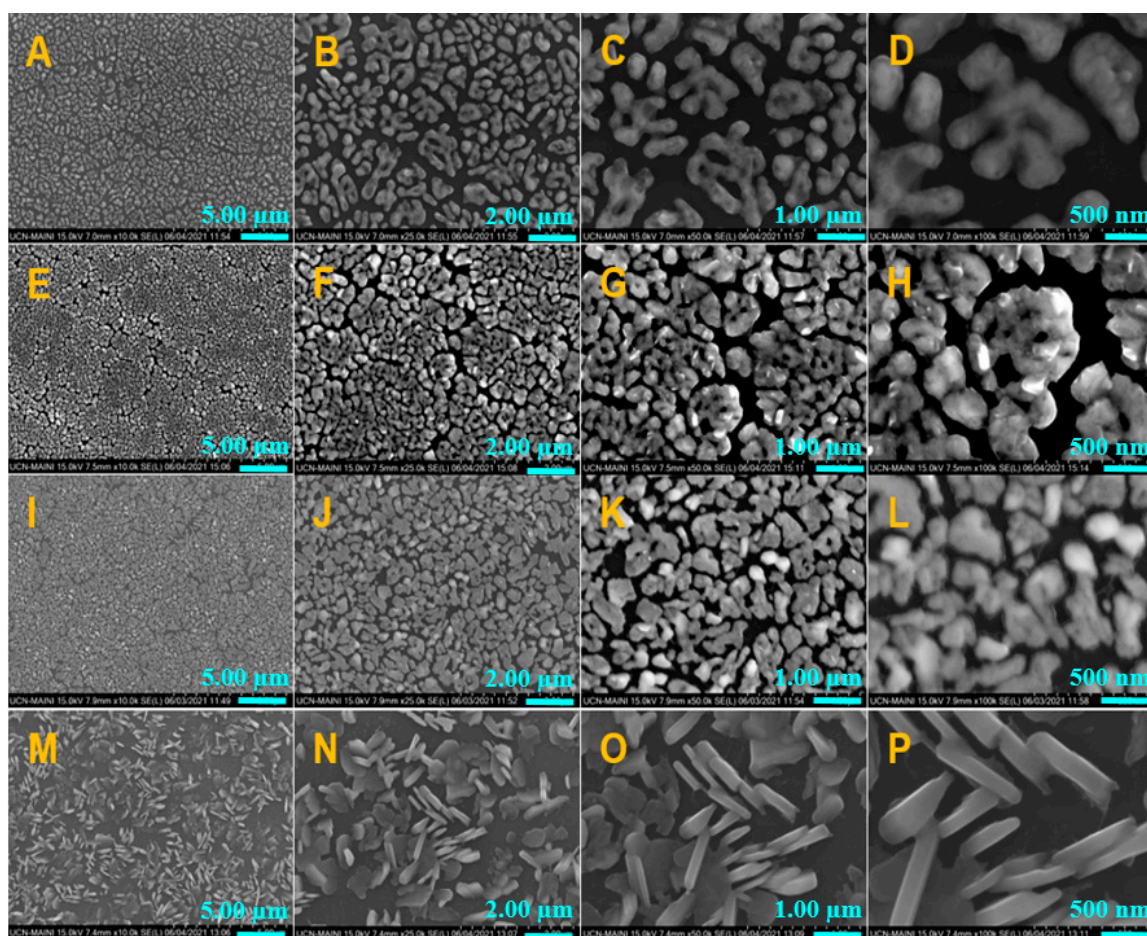


Figure S1: SEM images for MoS₂ samples grown through the thermal treatment of Mo thin films deposited via sputtering for 15 min (A), 20 min (E), 25 min (I) and 30 min (M). High magnification images are shown for MoS₂ surfaces prepared on Mo thin films deposited via sputtering for 15 min (A-D), 20 min (E-H), 25 min (I-L) and 30 min (M-P).

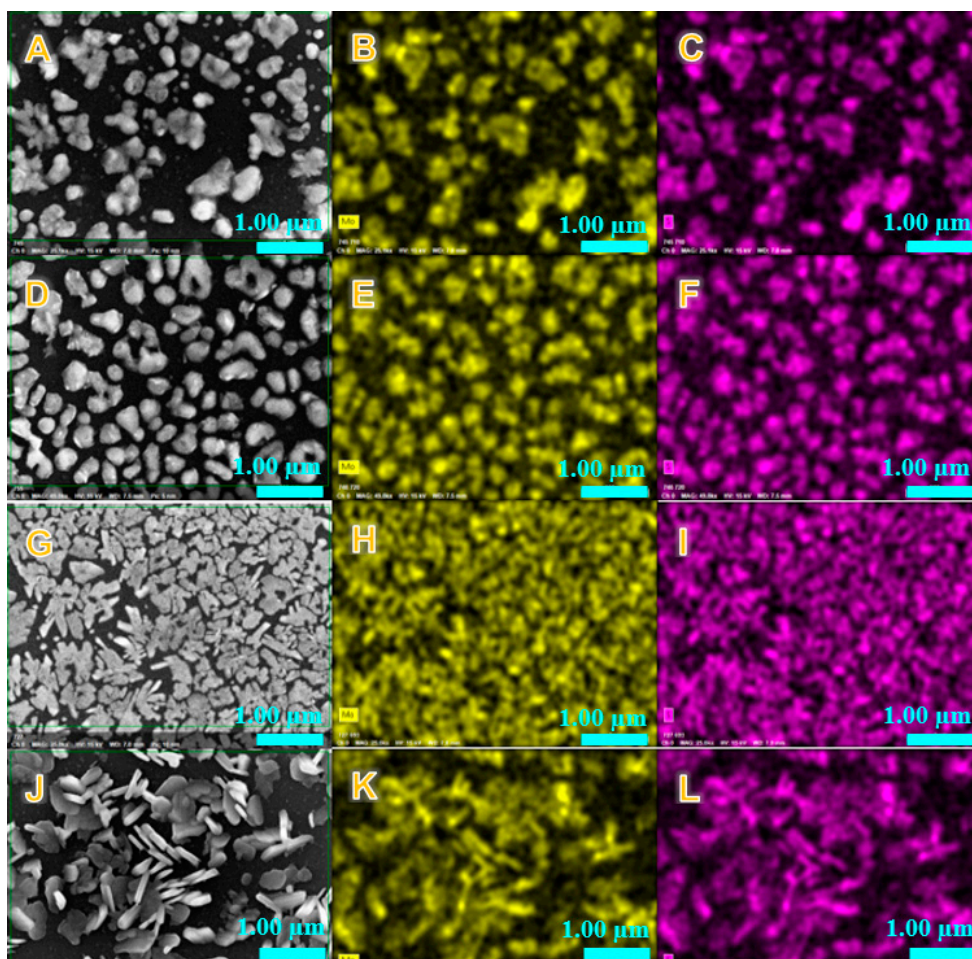


Figure S2: SEM images for the MoS₂ samples grown via thermal treatment of Mo thin films deposited by sputtering for (A) 15, (D) 20, (G) 25, and (J) 30 minutes and EDS element mapping of Mo (B, E, H and K) and S (C, F, I and L) for each respective sample.

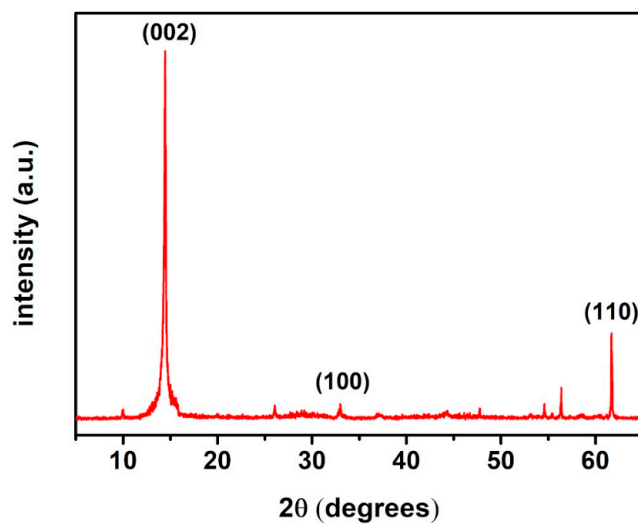


Figure S3: X-ray diffraction patterns of MoS₂

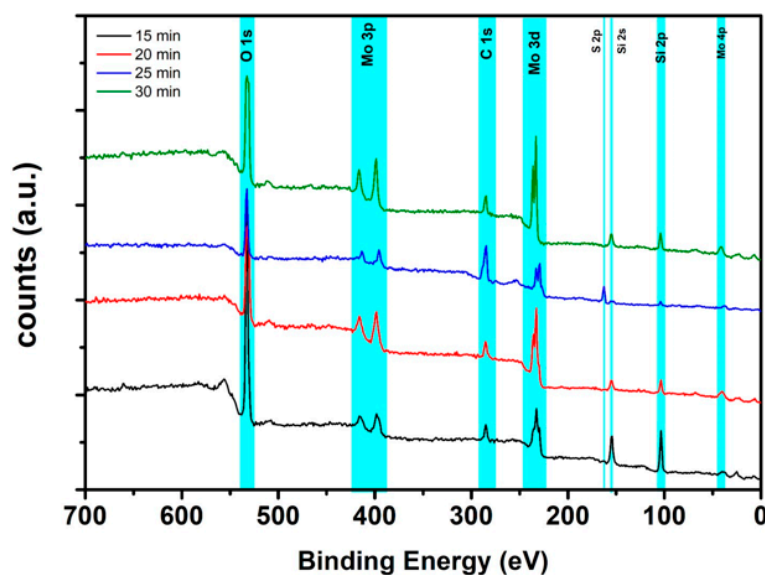


Figure S4: Survey spectra for the samples after the CVD process. The highlighted regions correspond to the different spectral peaks of the elements involved in the CVD process, Mo, Si, O and S

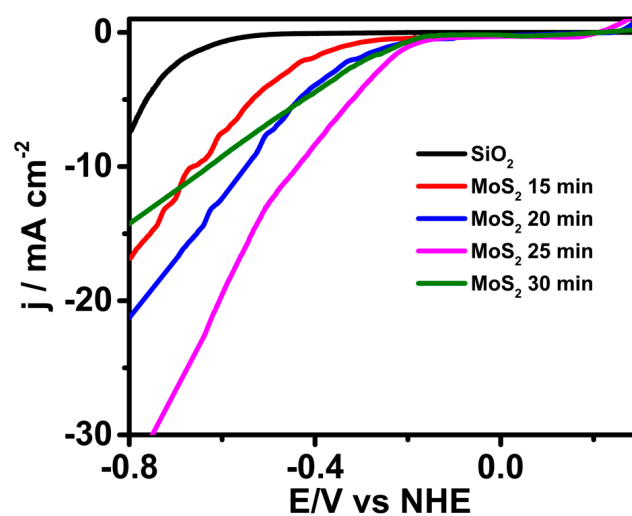


Figure S5: The linear sweep voltammograms (LSV) test at various synthesis time of MoS₂ in 0.5 M H₂SO₄ solution 0 (black line), 15 (red line), 20 (blue line), 25 (pink line) and 30 minute (dark green line). Scan rate: 2 mV s⁻¹.

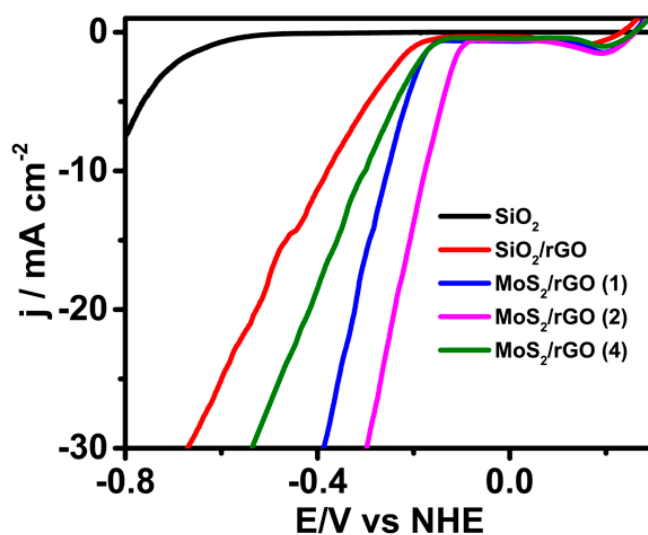


Figure S6: The HER LSV with MoS₂/nrGO modified electrodes prepared with composites containing different proportions rGO, SiO₂ (black line), SiO₂/rGO (red line), MoS₂/rGO (1) (blue line), MoS₂/rGO(2) (pink line) and MoS₂/rGO(4) (blue line). Scan rate: 2 mV s⁻¹.

Table S1: The size of MoS₂ nanoparticles

Synthesis time	Size (nm)
15	21.2
20	50.0
25	76.6
30	81.9